

Remarks

The Applicants have amended the specification to correct two typographical errors. Entry of the changes into the official file is respectfully requested.

Claims 23 and 44 have been amended to recite that the tetravalent vanadium compound is a vanadium compound at least most of which is tetravalent by mass in the case of Claim 23 and is a vanadium compound at least most of which has, by mass, a valence of 4 in the case of Claim 44. Support may be found in the Applicants' specification in paragraph [0050], for example. Entry into the official file is respectfully requested.

Claim 44 has further been amended to rearrange the components for the sake of clarity. Entry of that change into the official file is also respectfully requested.

Claim 44 stands rejected under 35 USC §112 as being indefinite. The Applicants note with appreciation the Examiner's helpful comments in that regard. The Applicants have, as mentioned above, rearranged the components of Claim 44 so that they are now both clear and definite. Withdrawal of the rejection is respectfully requested.

Claims 23, 25-27, 33-35, 38 and 44 stand rejected under 35 USC §103 over the hypothetical combination of Maru and Lee with Oppen. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying the combination against those claims. The Applicants nonetheless respectfully submit that one skilled in the art would not make the hypothetical combination, but in any event, the combination would still be different from the subject matter of those claims. Reasons are set forth below.

The rejection frankly acknowledges that Oppen does not identify a steel sheet with an overlying playing layer including zinc and/or aluminum as the metal/metal alloy to which the chromium-free film layer is applied. The Applicants agree. The Applicants also respectfully submit that Oppen fails to disclose other important aspects of those claims. For example, the Applicants' independent Claim 23 recites the presence of a vanadium compound at least most of which is tetravalent by mass and in the case of Claim 44 recites a vanadium compound at least most of which has, by mass, a valence of 4. This is different from Oppen.

Oppen discloses in various locations the utilization of a vanadate. For example, column 2, lines 31 and 65 refer to the presence of a vanadate. Similarly, column 3 at line 27 again refers to a vanadate ion. However, the Applicants respectfully submit that those skilled in the art would

understand a vanadate to be a compound containing pentavalent vanadium. The Applicants enclose a copy of Merriam-Webster's Ninth New Collegiate Dictionary which shows that indeed a vanadate is typically known as a pentavalent vanadium compound.

This is confirmed by Oppen again in column 3 at line 27 which refers to V_2O_5 . Those skilled in the art know this compound to contain pentavalent vanadium. Thus, the Applicants respectfully submit that those skilled in the art would understand that the Oppen vanadium compounds as disclosed by Oppen would tend to be pentavalent vanadium. This is sharply contrasted to the Applicants' claims which recite that the vanadium compounds are mostly by weight tetravalent vanadium. Thus, the Applicants respectfully submit that even if one skilled in the art were to hypothetically combine Maru and/or Lee with Oppen, the resulting treated steel sheet would have, at best, a chromium-free film wherein the film contains at least one selected from the group consisting of Al, Mg and Z, a phosphoric acid group, and a vanadium compound which is pentavalent. However, that is different from what the Applicants claim in independent Claims 23 and 44. The Applicants claim vanadium compounds that are mostly tetravalent by mass, as opposed to mostly pentavalent by mass as disclosed by Oppen. For this reason alone, the Applicants respectfully submit that the combination of Maru with Lee must fail.

The rejection turns to Maru and Lee to cure the deficiencies of Oppen. In that regard, the rejection states that it would be obvious to apply the chromium-free layer of Oppen to the plated steel of Maru or Lee to achieve the benefits of the coating taught by Oppen. The Applicants respectfully submit that one skilled in the art would not likely do this. In that regard, Maru discloses a steel sheet that has an Al-Zn alloy plated to the steel sheet and then an organic surface-treating agent on the surface of the Al-Zn alloy. That organic surface-treating agent is applied to provide excellent alkaline resistance, black rust resistance and lubricity.

This is sharply contrasted to Oppen which provides the chromium-free film layer to increase adhesion and anticorrosive properties as disclosed in column 1 at lines 27-30. The problem with utilizing the chromium-free film layer of Oppen is that it would have the opposite effect sought by Maru in that Oppen is intended to increase adhesion, while Maru seeks to have a layer of high lubricity. In other words, Oppen wants additional coatings to stick to the Oppen plate, while Maru seeks to have additional components not stick to the Maru steel sheet. The Applicants respectfully

submit that those skilled in the art would thus not make the hypothetical combination when the combination would tend to destroy a fundamental function of the Maru and Oppen coatings.

In the case of Lee, there is essentially no incentive to make the hypothetical combination since Lee already has applied a protective coating which improves adhesion and corrosion resistance. This would merely add another layer on top of the existing adhesive and anticorrosive layer. Thus, the Applicants respectfully submit that one skilled in the art would have no incentive to make the hypothetical combination.

The Applicants respectfully submit that they have therefore established that there is either no incentive to make the combination, the combination would be unlikely to be successful because of opposed teachings and, in any event, the steel sheets resulting from the combination would still be different from the subject matter of independent Claims 23 and 44. The Applicants therefore respectfully submit that the combinations are inapplicable to Claims 23, 25-27, 33-35, 38 and 44. Withdrawal of the rejection is respectfully requested.

Claims 28-37 stand rejected over the further hypothetical combination of Yamaji with Lee, Maru and Oppen. The Applicants respectfully submit that Yamaji fails to cure the deficiency set forth above with respect to the combination of Lee, Maru and Oppen. Withdrawal of that rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



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